



Assessment of Visitor Activities at Six Sites Within Golden Gate National Recreation Area

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1.0 INTRODUCTION

The National Park Service (NPS) is in the process of developing a dog management plan for Golden Gate National Recreation Area (GGNRA). GGNRA is located in and around San Francisco, California, with sites in San Francisco, San Mateo and Marin counties. Popular activities at the park include visiting the beach, sightseeing, surfing/windsurfing, dog walking, walking/running, cycling, hang-gliding, skateboarding, birdwatching, and many others. With its proximity to San Francisco, the park has a unique combination of visitors, including visitors from distant locations who may only visit the park once in a lifetime and visitors from the local area who come to the park frequently to exercise, walk their dogs, or pursue other activities.

In order to provide information that will inform the dog management plan, NPS requested that Industrial Economics, Incorporated (IEc) characterize park visitation at six sites within GGNRA: Muir Beach, Rodeo Beach, Crissy Field, Baker Beach, Ocean Beach, and Fort Funston (see Exhibit 1 for an overview map and Appendix C for detailed aerial photos). Muir Beach and Rodeo Beach are located in Marin County, while the remaining sites are in San Francisco County.

On-site visitor count studies were conducted by IEc in 2008 at four of the selected sites (Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach) as part of the Cosco Busan Oil Spill Natural Resource Damage Assessment. Thus, at these four sites, IEc relied on existing data to characterize visitation for this report.¹ At the remaining two sites (Muir Beach and Fort Funston), IEc conducted new on-site count studies in August 2011. In order to maintain consistency across sites, the new studies were conducted using the same methodology that was applied by IEc in 2008.

This report characterizes visitation in several different ways. First, for all six sites, visitors are classified by recreational activity based on four days of on-site observations. Second, for all sites except Rodeo Beach, monthly estimates of the total number of visitors are provided, including separate estimates of dogs at Fort Funston and Muir Beach.² Finally, for Crissy Field, visitor destinations are characterized, and estimates of the percentage of people and dogs that went in the water during their visit are provided.

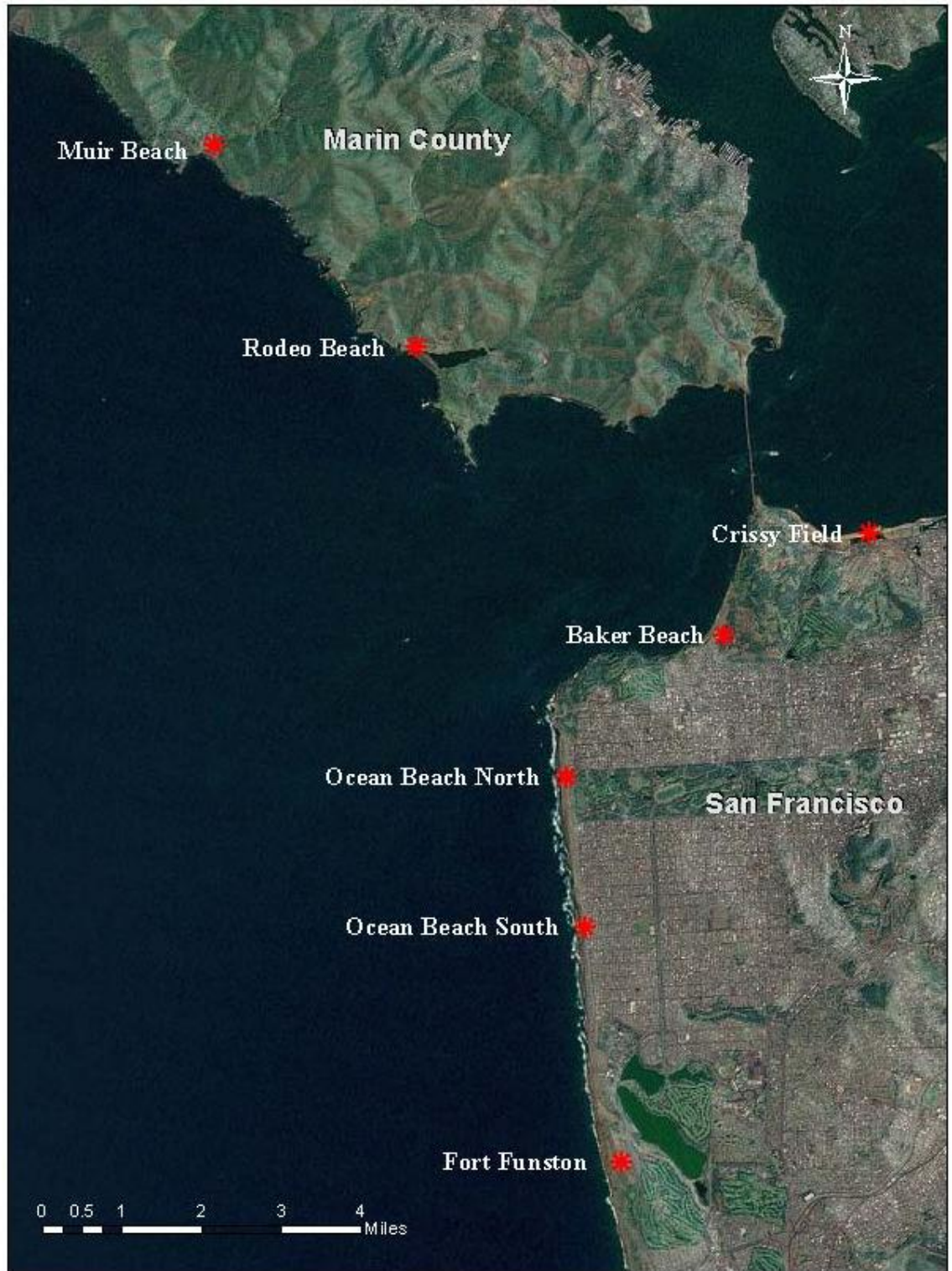
It is important to note that all characterizations of visitor activities included in this report are based on four days of on-site observations. The on-site observations were conducted in November 2008 at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach, and in August 2011 at Muir Beach and Fort Funston. The types of activities observed during these four-day count periods may differ from the types of activities pursued by visitors at other times of year.

The remainder of this report consists of three sections. The next section describes the methodology used to characterize visitation, including modifications to address unique situations at several sites. The results are then presented, including estimates of the percentage of visitors pursuing various activities and monthly visitation estimates. Finally, important caveats are discussed.

¹ Note that the Cosco Busan visitation data were not available when the dog management plan/DEIS was released in May, 2011, as the 2008 study was confidential pending a settlement agreement with the oil spill's "responsible party."

² Monthly estimates were not developed for Rodeo Beach because there is no vehicle counter at the site. The methodology used to develop visitation estimates requires a combination of vehicle counter data and on-site visitor counts.

EXHIBIT 1: SITE LOCATIONS



2.0 METHODOLOGY

This section describes the methodology used to characterize visitation at the six GGNRA sites. First, the methodology for the on-site visitor counts is described, including the approach used to characterize visitor activities. Second, the approach used to estimate visitation for each day of the four-day count period is described. Finally, the methodology used to combine the visitation estimates from the four-day count period with NPS vehicle counts to obtain monthly visitation estimates is described.

The methodology used for the November 2008 study was developed by IEc as part of the Cosco Busan Oil Spill Natural Resource Damage Assessment. IEc developed the methodology for the National Oceanic and Atmospheric Administration (NOAA) on behalf of the natural resource Trustees for the Cosco Busan Oil Spill: the United States Fish and Wildlife Service (USFWS), the National Park Service (NPS), the Bureau of Land Management (BLM), the National Oceanic and Atmospheric Administration (NOAA), the California Department of Fish and Game (CDFG), and the California State Lands Commission (CSLC). Prior to implementation, the proposed methodology was reviewed by the Trustees and by Dr. Rick Dunford of Environmental Economics Services, LLC. The methodology for the August 2011 study was designed to mimic the approach used in November 2008.

2.1 ON-SITE VISITOR COUNTS

Trained field personnel were deployed at site entrances on four days (two weekdays and two weekend days) to count completed trips to six sites within GGNRA (Exhibit 1). The counts were conducted on two separate occasions:

- November 13-16, 2008: Visitor counts were completed at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach from 7:00 a.m. to 5:30 p.m., Thursday through Sunday.
- August 18-21, 2011: Visitor counts were completed at Muir Beach and Fort Funston from 6:30 a.m. to 8:30 p.m., Thursday through Sunday.

The counts were scheduled to cover nearly all daylight hours. The 2011 counts began earlier and ended later than the counts conducted in 2008, as the 2011 counts were conducted in August when the days are longer.

Visitor counts were maintained on a tally sheet where field personnel recorded all visitors leaving the site. Every visitor was placed in one (and only one) of the following activity categories:

- hang glider,
- surfer/windsurfer/kite boarder,
- motorized boater,
- non-motorized boater,
- angler,
- biker,
- rollerblader/rollerskater/skateboarder,
- picnicker,

- dog walker,
- runner/walker,³
- crabber,
- other recreator,
- park staff/law enforcement, and
- school group.

The hang glider category was used only at Fort Funston (a popular location for hang gliding), and the school group category was used only at Rodeo Beach (a popular destination for school groups). Field personnel categorized visitors according to the equipment that they were carrying. They did not interview visitors in an attempt to determine the primary purpose of the trip.⁴

When visitors left in groups, each person in the group was categorized individually, according to the equipment that he or she was carrying and according to whether or not he or she was accompanied by a dog. For example, if two visitors left the park together but only one carried a fishing pole, then only one would be classified as an angler. Similarly, if two visitors were walking a single dog, only one would be classified as a dog walker. The only exception to this rule was for picnickers and boaters. When picnickers or boaters left the park in a group, all members of the group were placed in a single category.

During the 2011 visitor counts at Fort Funston and Muir Beach, field personnel counted the number of dogs in addition to counting people. The dog counts covered all dogs leaving the site, including dogs with visitors who were not classified as dog walkers (e.g., a dog with a fisherman or picnicker). Field personnel did not record whether dogs were on- or off-leash.

The six sites differ greatly with respect to the number and layout of visitor entrances. While counting visitors was relatively straightforward at Muir Beach, Rodeo Beach, Baker Beach, and Fort Funston, the large number of entrances at Crissy Field and Ocean Beach necessitated techniques tailored specifically to those two sites. The counting approach implemented for each site is described below and detailed site maps are provided in Appendix C.

- Muir Beach: At Muir Beach, visitor counts were conducted by a single observer stationed part-way up the bluff at the southeastern end of the beach. The observer looked towards the northwest and counted all visitors and dogs leaving the portion of the beach managed by the NPS. Visitors and dogs were counted as they left the beach both to the northwest toward the county beach, and to the east toward the Muir Beach parking lot.
- Rodeo Beach: At Rodeo Beach, visitor counts were conducted by a single observer stationed at the northwestern end of the beach, near the parking lot at the end of Mitchell Road. The observer looked towards the southeast and counted all visitors leaving the beach, including visitors crossing Mitchell Road towards the parking lot, visitors crossing the pedestrian bridge over Rodeo Lagoon, and visitors leaving via the Rodeo Lagoon trail.

³ Runners and walkers with dogs were always placed in the “dog walker” category rather than the “runner/walker” category.

⁴ Although targeted interviews were conducted at the Crissy Field parking lots, interviewers did not ask respondents to indicate the primary purpose of their trip.

During busy periods (i.e., weekend afternoons), a second observer provided assistance with counting departing visitors.

- Crissy Field: At Crissy Field, observers counted all visitors leaving Crissy Field at three main exits: the East Beach parking lot exit lane, the West Bluff parking lot exit lane, and the east end of the promenade. The observer stationed at the east end of the promenade counted visitors departing on the promenade and visitors departing on the diagonal path that runs from the East Beach parking lot towards the intersection of Mason Street and Yacht Road. The observers at the parking lot exit lanes counted visitors in vehicles and pedestrians/bikers leaving the lots.

At minor entrances to Crissy Field, observers counted visitors during systematically selected time periods throughout the four-day observation period. At Long Avenue and at the western end of the East Beach Lot, observers counted departing visitors every other hour. At the Long Avenue location, departing pedestrians and bikers were counted as they headed east on Long Avenue, and departing pedestrians were counted as they began to climb the steps of the Battery East Trail. (Vehicles departing on Long Avenue were not included in the counts as these vehicles originated at Fort Point.) At the western end of the East Beach Lot, departing pedestrians and bikers were counted as they left Crissy Field on the two trails that run from the western end of the East Beach lot towards Mason Street.

At the four trails crossing the large grassy area at the center of Crissy Field (the former airfield), observers counted departing visitors every fourth half-hour (i.e., the observer rotated continually among the four trails, moving to a new trail every half hour.) In these locations, visitors were only counted if they visited the promenade; visitors who only spent time on the grassy area of Crissy Field without accessing the promenade or the area near the waterfront were excluded from the counts.⁵

At each of the two parking lots (East Beach and West Bluff), field personnel were stationed in two different locations. First, as discussed above, observers were stationed at the parking lot exit lanes, where they focused exclusively on conducting visitor counts. These two observers did not classify visitor activities, as the vast majority of visitors leaving the park in these locations were already in their vehicles, making it difficult to determine what activity they had been pursuing during their visit.

Second, field personnel were stationed between each parking lot and the promenade, where they conducted brief interviews with visitors as they left Crissy Field and headed towards their vehicles. Every fifth adult visitor was selected for an interview, and interviewers alternated every two hours between the two parking lots. The interviews provide information about whether or not the visitor had a dog, whether or not the visitor went in the water, whether or not the dog went in the water, and what area of Crissy Field was visited (Torpedo Wharf, promenade, and/or beach).⁶

⁵ These visitors were excluded from the counts by design, as they represented individuals who were not likely to have been impacted by the beach closures resulting from the Cosco Busan Oil Spill.

⁶ Similar visitor interviews were conducted with departing visitors at the eastern end of the promenade in order to characterize activities pursued by visitors who do not access Crissy Field via the two main parking lots.

- Baker Beach: At Baker Beach, observers counted departing visitors in two locations: at the Gibson Road entrance to the main parking areas and at the Lincoln Boulevard entrance to the Sand Ladder Trail. At each of the two locations, observers counted during alternating two-hour time blocks throughout the four-day period. At the Gibson Road location, observers simply counted visitors and did not classify their activities. Visitor activities were not determined at Gibson Road because visitors were already in their vehicles as they were being counted, making it difficult to determine what activity they had been pursuing during their visit.
- Ocean Beach: Ocean Beach was divided into two sections for counting visitors: Ocean Beach North and Ocean Beach South.

Ocean Beach North was defined as the stretch of Ocean Beach from the northern end of the promenade at the end of Great Highway to the southern end of the promenade at Lincoln Way. There are 28 stairwells (numbered sequentially from north to south) within this section that provide access to the beach. These 28 stairwells were divided into three groups: stairwells 1 to 8, stairwells 9 to 18, and stairwells 19 to 28. Departing visitors were counted at each stairwell during systematically selected time periods. At stairwells 1 to 8, visitors were counted every fourth half-hour. At stairwells 9 to 28, visitors were counted every fifth half-hour. The systematic sampling was implemented by assigning a single observer to each stairwell group and having the observer rotate among the stairwells, counting departures at two adjacent stairwells every half hour. For each stairwell group, the starting point for the visitor counts was randomly selected. Visitors who remained on the promenade or in the parking lot were not included in the counts.

Ocean Beach South was defined as the stretch of Ocean Beach from Lincoln Way to the Second Overlook parking area located just south of Sloat Boulevard. Between Lincoln Way and Vicente Street, departing visitors leave the beach primarily at major cross streets, where there are paths that cut through the sand dunes and there are crosswalks that cross Great Highway. A single observer rotated hourly among eight major cross streets, counting departures: Lincoln Way, Judah Street, Lawton Street, Noriega Street, Pacheco Street, Rivera Street, Taraval Street, and Vicente Street. The starting location was randomly selected at the beginning of the four-day period.

At Sloat Boulevard and Second Overlook parking areas, observers counted departing visitors every other hour throughout the four-day period. Visitors who stayed in the parking areas or at the top of the bluff were not included in the counts.

- Fort Funston: At Fort Funston, visitor counts were conducted at five locations, covering all visitors entering the main parking lot and the small parking lot to the south near the NPS offices. Counting visitors at the main parking lot at Fort Funston is particularly challenging because visitors completing trips enter the parking lot in a diffuse manner rather than along well-defined paths.⁷ Thus, the border of the main parking lot was divided into four distinct segments (see blue lines on map in Appendix C), with each observer assigned to a single segment. Observers were instructed to count visitors and

⁷ While a single observer could have easily counted visitors departing in vehicles at the main entrance to the parking lot, it would have been difficult to count dogs inside vehicles.

dogs as they crossed over their segment and entered the parking lot. In addition, observers noted the size of all dog groups. Dog groups were defined as multiple dogs that were clearly under the control of a single individual or that got into a single car before leaving the site.

2.2 VISITATION ESTIMATES FOR FOUR-DAY COUNT PERIOD

The on-site visitor counts completed at the six GGNRA sites were used to estimate visitation on each day of the four-day count period.

The visitation estimates are relatively straightforward for sites such as Muir Beach, Rodeo Beach, and Fort Funston, where observers counted departing visitors throughout the day at all entrances. At these sites, daily trip estimates were developed by counting the tallies associated with each entrance, adjusting for any missed time periods (e.g., breaks), then summing across all entrances. Missed time periods were addressed by dividing each count by the proportion of the scheduled time period during which the count was conducted. For example, if an observer took breaks that totaled 5% of the scheduled time period, then the visitor count would be divided by 0.95 to obtain the visitation estimate for that time period.

At three locations (Ocean Beach North, the section of Ocean Beach South between Lincoln Way and Vicente Street, and the four trails crossing the former airfield at Crissy Field), interviewers rotated systematically among a set of similar entrances throughout the day (e.g., moving to a different entrance every hour), with the starting location randomly selected on the first day. At these sites, the trip estimate was obtained by adjusting the counts for any breaks (as described above), summing the adjusted counts, and then multiplying by the number of entrances. This approach treats the counts obtained during each time period as a random sample from the set of entrances, and the count is assumed to represent completed visits at all of the entrances during that particular time period.

At six locations (Ocean Beach Sloat Boulevard, Ocean Beach Second Overlook, Baker Beach parking lot, Baker Beach Sand Ladder, Crissy Field Long Avenue, and Crissy Field East Beach parking lot trails) trip counts were conducted during a systematic sample of time periods throughout the four-day period (e.g., every other hour). At these sites, the daily trip estimate was obtained by adjusting each count for any breaks (as described above), summing the adjusted counts, then dividing by the proportion of the day during which counts were conducted at the site. For example, if counts were conducted every other hour at a given site, the adjusted counts would be summed and divided by 0.5 to estimate the daily count. This approach treats the periodic counts at the site as a random sample of time periods, and the sample is assumed to represent completed visits to the site during all time periods.

2.3 MONTHLY VISITATION ESTIMATES

Monthly visitation estimates were developed by combining visitation estimates from the four-day count period with monthly vehicle counts provided by NPS. Automated vehicle counters are located at site entrances and count vehicles entering each site. IEc used these vehicle counters to determine the number of vehicles entering each site on each day of the four-day count period. The daily vehicle counts were combined with daily visitation estimates to estimate the number of

visitors per vehicle.⁸ These visitors-per-vehicle estimates were then multiplied by the monthly vehicle counts to estimate monthly visitation at each site.

Specifically, the on-site count effort was used to develop an estimate of visitors on two weekdays and two weekend days. Let C_{WD} denote the weekday visitation estimate, and let C_{WE} denote the weekend visitation estimate. Similarly, let V_{WD} denote the vehicle count on the two weekdays, and let V_{WE} denote the vehicle count on the two weekend days. The number of visitors per vehicle is estimated as:

$$\text{Visitors per Vehicle} = \frac{5 \times C_{WD} + 2 \times C_{WE}}{5 \times V_{WD} + 2 \times V_{WE}}$$

The weekday visitor/vehicle estimates are multiplied by five and the weekend visitor/vehicle estimates are multiplied by two to reflect the relative frequency of each type of day. The visitation estimate for any given month is then obtained by multiplying the NPS vehicle count for that month by the visitors-per-vehicle estimate.

Monthly visitation estimates were developed for all sites except Rodeo Beach, which does not have a vehicle counter at the main entrance.

3.0 RESULTS

This section characterizes visitation at the six GGNRA sites. First, observations from the four days of on-site counts are summarized, including information about visitor activities, dog groups (Fort Funston only), visitor destinations within the site (Crissy Field only), whether or not the visitor went in the water (Crissy Field only), and whether or not the visitor's dog went in the water (Crissy Field only). Second, data from NPS vehicle counters are incorporated and estimates of monthly visitation are provided. For Fort Funston and Muir Beach, estimates of dog visitors (in addition to human visitors) are developed.

3.1 VISITOR ACTIVITIES

Exhibit 2 summarizes the activities pursued by visitors at each site. The activity categories have been consolidated somewhat for presentation purposes. Specifically, the motorized boater, non-motorized boater, and crabber categories were eliminated (very few visitors belonged to these categories) and visitors in these three categories were reclassified as "Other."

As discussed above, visitors were placed in activity categories based on the equipment that they were carrying and whether or not they had a dog with them. Many visitors could not be categorized and were simply classified as "Other." The "Other" category is a catch-all category capturing visitors who were not carrying identifiable equipment, did not have a dog with them, and were clearly not running or walking for exercise. Visitors classified as "Other" frequently included typical beach visitors and sightseers.

At Baker Beach, activities can only be summarized for a subset of the visitors – those who access the beach via the Sand Ladder trail entrance. While observers at the Sand Ladder entrance

⁸ For simplicity, these estimates are described as the "number of visitors per vehicle," but a more precise description would be "the ratio of visitors to vehicles," as many visitors do not actually drive to the sites. At Ocean Beach and Crissy Field, for example, many visitors access the site by walking, biking, or using public transportation. The estimation approach uses the vehicle counts as an index of overall visitation.

counted visitors *and* classified their activities, observers stationed at the parking lot entrance only counted visitors. The Sand Ladder entrance is a relatively minor entrance to the beach, accounting for approximately 12% of the total visitation during the four days of on-site counts.

Similarly, at Crissy Field, activities can only be summarized for the subset of visitors who access the site via the trail/promenade entrances, as observers stationed at the parking lot exit lanes focused only on counting visitors. However, in contrast to Baker Beach, additional field personnel interviewed visitors in the Crissy Field parking lots as they approached their vehicles to leave the site, and this interview data can be used to estimate the percentage of dog walkers. While the results below summarize activities for visitors observed at the trail/promenade entrances only, Section 3.3 provides a more comprehensive estimate for dog walking – an estimate that includes visitors who access the site via the trail/promenade entrances and visitors who access the site via the main parking lots.

Site-specific results related to visitor activities are summarized below:

- Muir Beach: At Muir Beach, 79% of visitors were general beach visitors and were placed in the catch-all “Other” category.⁹ Other activities observed at Muir Beach included running/walking (10% of visitors), dog walking (6%), picnicking (3%), surfing (2%), and angling (1%).
- Rodeo Beach: At Rodeo Beach, general beach visitors were a minority (39%) of all individuals observed, with a substantial number of visitors classified as runners/walkers (18%) or visiting the beach with a school group (19%). Other popular activities observed at Rodeo Beach included dog walking (8%), picnicking (7%), surfing (7%), and biking (2%). School groups visited Rodeo Beach primarily on weekdays (see Appendix A).
- Crissy Field Trails and Promenade: At Crissy Field, nearly all visitors observed at the trail/promenade entrances were runners, walkers, bikers, or dog walkers. Seventy-two percent of visitors were runners/walkers, 21% were bikers, and 6% were dog walkers.¹⁰
- Baker Beach Sand Ladder: At Baker Beach, information on visitor activities was available at the Sand Ladder Trail, but not at the main parking lot. As one would expect at a pedestrian entrance, the vast majority of visitors (87%) were classified as runners/walkers at this location. Dog walking (7%), biking (3%), and picnicking (2%) were also popular at this site.

⁹ All results discussed in the text are rounded to the nearest percentage point.

¹⁰ These estimates focus only on the trail and promenade entrances at Crissy Field. They exclude visitors leaving via the two main parking lots, visitors who only visited the multi-use path along Mason Street, and visitors who only visited the large grassy area (the former airfield). In Section 3.3, we provide a more comprehensive estimate of the percentage of dog walkers at Crissy Field – an estimate that incorporates visitors who leave the site via the trails, the promenade, and the two parking areas.

EXHIBIT 2: VISITOR ACTIVITIES BY SITE^{a, b}

| | RUNNER OR WALKER | | | | BLADER OR SKATER | | | SCHOOL GROUP | HANG GLIDER | OTHER ^c | TOTAL |
|---|------------------------|-------|------|-------|------------------------|-------|------|-----------------|----------------|--------------------|-------|
| MUIR BEACH | 10.3% | 5.5% | 3.0% | 1.8% | 0.0% | 0.1% | 0.8% | 0.0% | 0.0% | 78.5% | 100% |
| RODEO BEACH | 17.8% | 8.1% | 6.6% | 6.6% | 0.0% | 1.9% | 0.1% | 19.4% | 0.0% | 39.4% | 100% |
| CRISSY FIELD (TRAILS ONLY) ^d | 71.5% | 5.8% | 0.1% | 0.0% | 0.4% | 21.3% | 0.1% | 0.0% | 0.0% | 0.7% | 100% |
| BAKER BEACH (SAND LADDER ONLY) ^e | 86.8% | 6.9% | 1.5% | 0.5% | 0.0% | 3.2% | 0.0% | 0.0% | 0.0% | 1.1% | 100% |
| OCEAN BEACH ^f | | | | | | | | | | | |
| North | 28.2% | 9.2% | 7.7% | 10.1% | 0.3% | 1.7% | 0.1% | 0.0% | 0.0% | 42.7% | 100% |
| South | 21.5% | 9.6% | 2.9% | 11.7% | 0.1% | 3.7% | 0.2% | 0.0% | 0.0% | 50.2% | 100% |
| Total | 25.1% | 9.4% | 5.5% | 10.8% | 0.2% | 2.7% | 0.2% | 0.0% | 0.0% | 46.2% | 100% |
| FORT FUNSTON | 24.5% | 62.1% | 0.4% | 0.0% | 0.0% | 0.2% | 0.5% | 0.0% | 1.4% | 10.9% | 100% |

Notes:

^a Observations at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach are from November 2008. Observations at Muir Beach and Fort Funston are from August 2011.

^b At each location, percentages are calculated as a weighted average of weekday and weekend percentages, where weights reflect the relative visitation on weekdays versus weekends. Separate results for weekdays and weekends are presented in Appendix A.

^c As discussed in the text, visitors were placed in activity categories based on the equipment that they were carrying and whether or not they had a dog with them. As a result, many visitors could not be categorized and were simply classified as “Other.” The “Other” category is a catch-all category capturing visitors who were not carrying identifiable equipment, did not have a dog with them, and were clearly not running or walking for exercise. Visitors classified as “Other” frequently included typical beach visitors and sightseers.

^d The activity information in this exhibit applies only to visitors accessing the waterfront area of Crissy Field via trails or the promenade. A more comprehensive estimate of the percentage of dog walkers – an estimate that includes visitors who leave the site via the two main parking areas – is provided in Section 3.3.

^e Although visitor counts were conducted at the Baker Beach parking lot entrance, no information about visitor activities is available from this location. The activity information in this exhibit applies only to visitors accessing Baker Beach via the Sand Ladder trail off of Lincoln Boulevard.

^f Ocean Beach North is defined as the area of Ocean Beach north of Lincoln Way, while Ocean Beach South is defined as the area of Ocean Beach south of Lincoln Way.

- Ocean Beach: At Ocean Beach, 46% of visitors were placed in the catch-all “Other” category, representing general beach recreation. Additional activities observed at Ocean Beach included running/walking (25% of visitors), surfing (11%), dog walking (9%), picnicking, (6%), and biking (3%). Of the six locations studied, Ocean Beach was the most popular for surfing.
- Fort Funston: Fort Funston was very different from other sites in that the majority (62%) of visitors were dog walkers. Other popular activities at Fort Funston included running/walking (25%) and hang gliding (1%).¹¹ The 11% of visitors classified as “Other” at Fort Funston were primarily sight-seers who visited the overlook area. Dog walking at Fort Funston is somewhat more popular on weekdays (66% of visitors) than on weekends (57% of visitors) (see Appendix A).

3.2 VISITOR INTERVIEWS AT CRISSY FIELD

Exhibit 3 summarizes responses to interviews conducted at Crissy Field. The interviews were conducted in three locations: the East Beach Parking Lot (located opposite the main beach area), the West Bluff Parking Lot (located opposite Torpedo Wharf), and the eastern end of the Promenade. Interviewers asked respondents if their dog went in the water (if applicable), if they themselves went in the water, and whether or not they visited the promenade, the sand, or Torpedo Wharf.

Eight hundred sixteen interviews were attempted and 484 were completed, providing a response rate of 59.3%. Overall, 32% of the respondents had dogs with them.¹² It appears that the East Beach lot is most popular with dog walkers, with 54% of the respondents at that location having dogs, compared to 32% at the West Bluff lot and 21% at the east end of the promenade. In addition, dog walking is much more popular on weekdays than on weekends at Crissy Field. On weekdays 44% of respondents were walking dogs, while only 21% were walking dogs on the weekend (see Appendix B for details).

Approximately half of the visitors with dogs indicated that their dog went in the water. Dog walkers interviewed at the East Beach lot and at the east end of the promenade were much more likely than dog walkers interviewed at the West Bluff lot to report that their dog went in the water (56% at the East Beach lot, 55% at the promenade, and 30% at the West Bluff lot).

With regard to visitor destinations, 86% of respondents visited the Promenade, 48% went on the sand, and 20% visited Torpedo Wharf. Only 11% of the respondents reported that they went in the water. Visitors interviewed at the East Beach lot were most likely to report that they went in the water (20% of respondents versus only 8% at the promenade and 3% at the West Bluff lot).

¹¹ The number of hang gliders was likely underestimated, as some hang gliders remained at the site to socialize after dark. For safety reasons, field personnel did not count visitors after dark.

¹² Overall results are weighted averages of results from the three interview locations, where the weights reflect the relative visitation level at each location.

EXHIBIT 3: RESPONSES TO INTERVIEW QUESTIONS AT CRISSY FIELD^a

| | EAST BEACH PARKING LOT (N = 187) | WEST BLUFF PARKING LOT (N = 120) | EAST END OF PROMENADE (N = 177) | COMBINED ^b (N = 484) |
|---|--|--|---------------------------------------|------------------------------------|
| Percentage of respondents with dogs | 53.8% | 31.8% | 21.1% | 32.2% |
| Percentage of dog walkers whose dogs went in water | 55.5% | 29.7% | 55.3% | 50.7% |
| Percentage of respondents who went in the water | 20.3% | 2.8% | 8.1% | 10.6% |
| Percentage of respondents who visited the promenade | 76.9% | 66.5% | 96.7% | 85.6% |
| Percentage of respondents who went on the sand | 63.0% | 28.2% | 46.1% | 47.6% |
| Percentage of respondents who visited Torpedo Wharf | 13.2% | 38.8% | 17.6% | 20.2% |

Notes:

^a At each location, percentages are calculated as a weighted average of weekday and weekend survey responses, where weights reflect the relative visitation on weekdays versus weekends. Separate results for weekdays and weekend days are presented in Appendix B.

^b The combined percentages are calculated as weighted averages of survey responses at the three locations, where weights reflect the relative visitation at each location.

3.3 DOG WALKING

Exhibits 4a and 4b summarize the percentage of visitors that were dog walkers at each site for each type of day (weekday and weekend). With the exception of Crissy Field, these percentages were obtained directly from Exhibit 2 and from Appendix A.

At Crissy Field, the results reported in Exhibit 2 and Appendix A exclude visitors who access the site via the two main parking areas. Thus, interviews conducted with a sample of visitors entering these two parking areas were used to estimate the percentage of visitors that were dog walkers at these locations (i.e., first row of Exhibit 3). The overall percentage of dog walkers was calculated as a weighted average of the percentage of dog walkers at these two parking lots and at the trails/promenade (i.e., third row of Exhibit 2), with weights equal to the number of visitors at each location.

EXHIBIT 4a: PERCENTAGE DOG WALKERS BY SITE AND TYPE OF DAY^a

| | WEEKDAY | WEEKEND | OVERALL ^b |
|--|---------|---------|----------------------|
| MUIR BEACH | 4.9% | 6.2% | 5.5% |
| RODEO BEACH | 6.7% | 9.3% | 8.1% |
| CRISSY FIELD | 30.7% | 17.5% | 24.0% |
| BAKER BEACH (SAND LADDER TRAIL ONLY) ^c | 7.8% | 6.3% | 6.9% |
| OCEAN BEACH ^d | | | |
| North | 10.4% | 8.2% | 9.2% |
| South | 10.6% | 8.9% | 9.6% |
| Total | 10.5% | 8.5% | 9.4% |
| FORT FUNSTON ^e | 66.1% | 57.4% | 62.1% |

Notes:

^a Observations at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach are from November 2008. Observations at Muir Beach and Fort Funston are from August 2011.

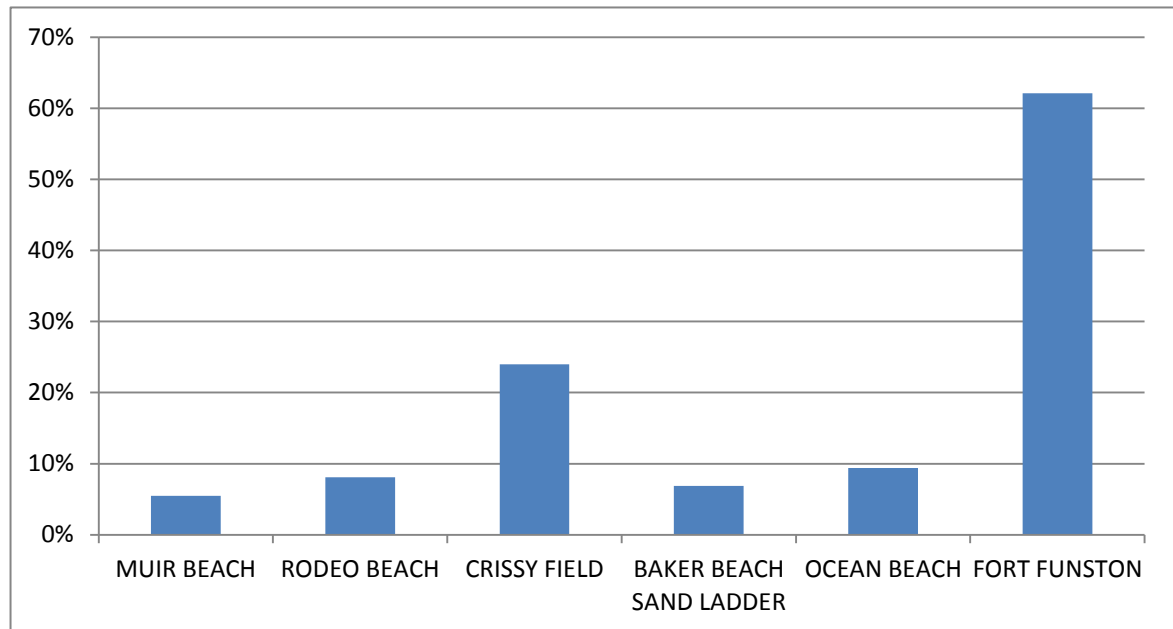
^b The overall percentage dog walkers is calculated as a weighted average of the weekday and weekend percentages, where the weights reflect the relative visitation on each type of day.

^c No information about visitor activities is available from the main entrance to Baker Beach. The Sand Ladder Trail is a pedestrian entrance to Baker Beach located off of Lincoln Boulevard.

^d Ocean Beach North is defined as the area of Ocean Beach north of Lincoln Way, while Ocean Beach South is defined as the area of Ocean Beach south of Lincoln Way.

^e No information about visitor activities is available from the John Muir Drive entrance to Fort Funston (see discussion in caveats section of report).

EXHIBIT 4b: PERCENTAGE DOG WALKERS BY SITE



Of the six sites studied, Fort Funston and Crissy Field have the largest proportion of dog walkers by far, with 62% of visitors classified as dog walkers at Fort Funston and 24% of visitors classified as dog walkers at Crissy Field. The proportion of dog walkers is somewhat lower at other sites, with dog walkers comprising 9% of Ocean Beach visitors, 8% of Rodeo Beach visitors, 7% of Baker Beach visitors, and 6% of Muir Beach visitors. At San Francisco sites (Crissy Field, Baker Beach, Ocean Beach, and Fort Funston), the proportion of dog walkers is larger on weekdays than on weekends. In contrast, at Marin County sites (Muir Beach and Rodeo Beach), the proportion of dog walkers is larger on weekends than on weekdays.

At Fort Funston, many visitors were observed with large groups of dogs. While some of these visitors may be individuals who own multiple dogs, most are likely professional dog walkers. Exhibits 5a and 5b classify all dogs observed at Fort Funston by the size of the dog group. The difference between weekdays and weekends is striking. On weekdays, 50% of the dogs observed were in groups of five or more dogs, with approximately 15% in groups of ten or more dogs. In contrast, on weekends, only 7% of the dogs observed were in groups of five or more dogs, and fewer than 2% were in groups of ten or more dogs.

As many dog owners hire professional dog walkers during the work week, we assume that the difference in the number of large dog groups is due to the presence of professional dog walkers on weekdays. It is interesting to note that the total number of dogs observed on the two weekend days (3,268) was very similar to the total number of dogs observed on the two weekdays (3,195), yet the number of dog *walkers* observed on the weekend (2,602) was much larger than the number observed on the weekdays (1,411). This may indicate that the same dogs are visiting Fort Funston

on the two sets of days, but they are brought to the park by different visitors (professional dog walkers with multiple dogs on weekdays and dog owners with fewer dogs on weekends).

EXHIBIT 5a: NUMBER OF DOGS BY GROUP SIZE AT FORT FUNSTON^a

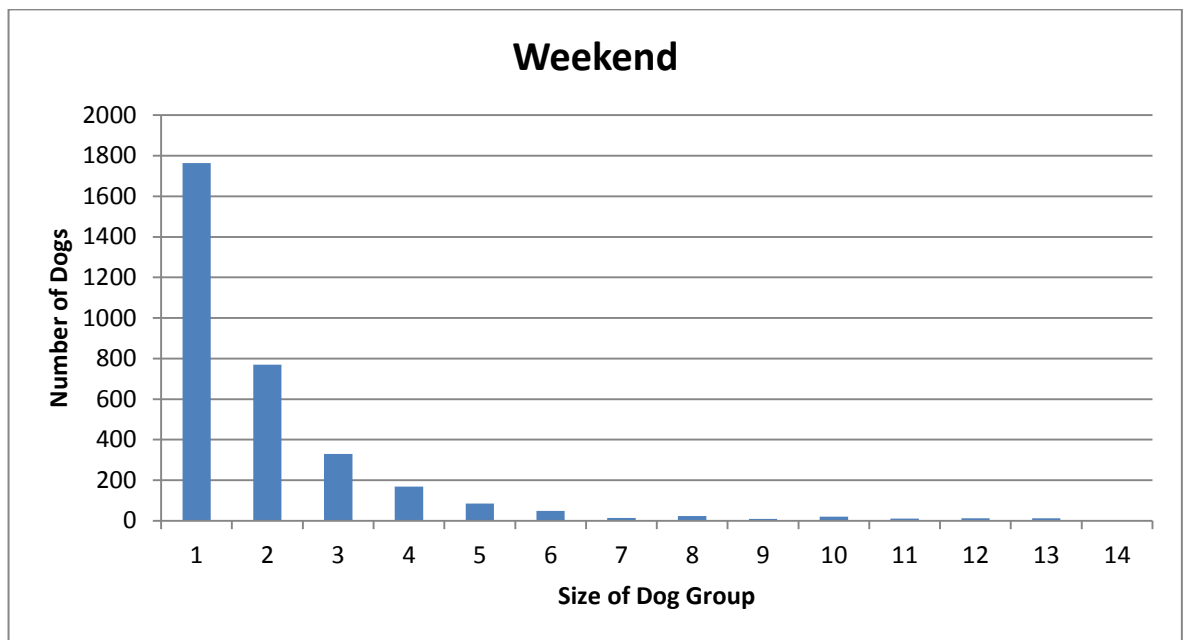
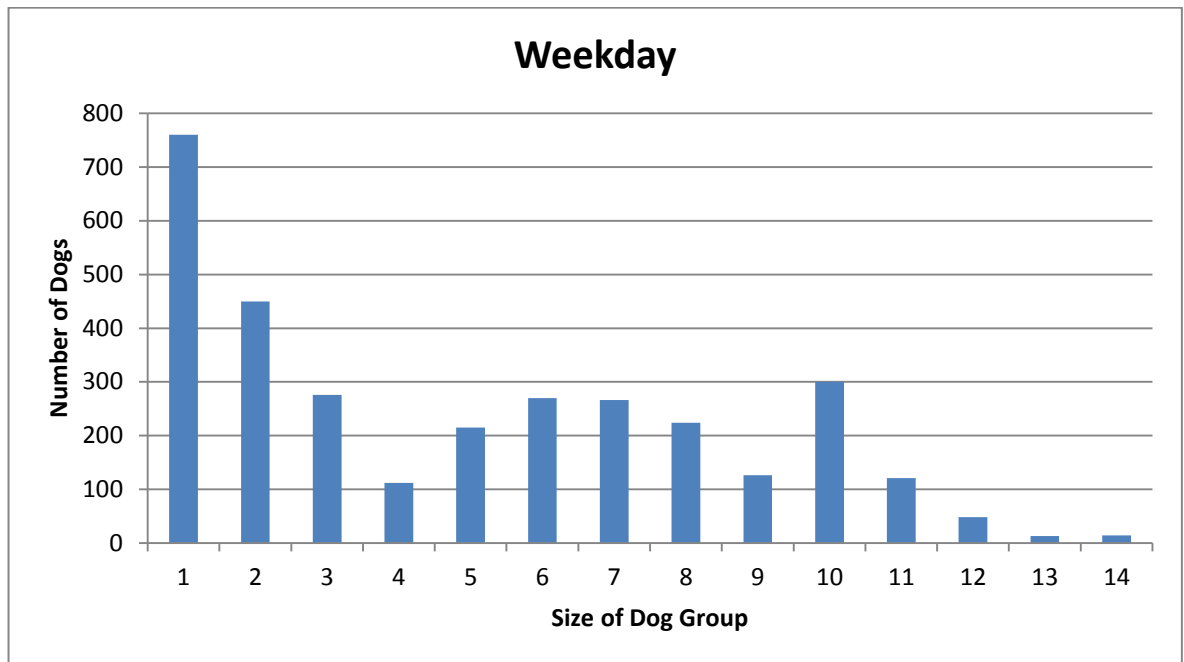
| | WEEKDAY | | WEEKEND | |
|-------------------|--------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| SIZE OF DOG GROUP | NUMBER OF DOGS OBSERVED ^b | PERCENTAGE OF DOGS OBSERVED | NUMBER OF DOGS OBSERVED ^b | PERCENTAGE OF DOGS OBSERVED |
| 1 Dog | 760 | 23.8% | 1,764 | 54.0% |
| 2 Dogs | 450 | 14.1% | 770 | 23.6% |
| 3 Dogs | 276 | 8.6% | 330 | 10.1% |
| 4 Dogs | 112 | 3.5% | 168 | 5.1% |
| 5 Dogs | 215 | 6.7% | 85 | 2.6% |
| 6 Dogs | 270 | 8.5% | 48 | 1.5% |
| 7 Dogs | 266 | 8.3% | 14 | 0.4% |
| 8 Dogs | 224 | 7.0% | 24 | 0.7% |
| 9 Dogs | 126 | 3.9% | 9 | 0.3% |
| 10 Dogs | 300 | 9.4% | 20 | 0.6% |
| >10 Dogs | 196 | 6.1% | 36 | 1.1% |
| TOTAL | 3,195 | 100.0% | 3,268 | 100.0% |

Notes:

^a Weekday observations are from August 18-19, 2011, and weekend observations are from August 20-21, 2011.

^b This column presents the number of dogs observed, not the number of dog groups. For example, the 300 weekday dogs in the “10 Dogs” row represent 30 groups with 10 dogs in each group (300 = 30 x 10).

EXHIBIT 5b: NUMBER OF DOGS BY GROUP SIZE AT FORT FUNSTON



3.4 MONTHLY VISITATION ESTIMATES

Monthly visitation estimates are presented in Exhibit 6 for January to December, 2009 for all sites except Rodeo Beach. As described above, visitation estimates were developed by multiplying the monthly vehicle counts by the ratio of visitors to vehicles observed during the four-day count period. Estimates were not developed for Rodeo Beach due to the absence of an automated vehicle counter at the entrance to the site. The visitation estimates were developed for 2009 because consistent NPS vehicle counts are available for that year. Automated vehicle counters were inspected and new batteries were installed in all counters prior to the November 2008 Cosco Busan data collection effort and, as a result, the automated counters generally provided consistent data throughout all of 2009.

Visitation was substantially higher at Crissy Field and Ocean Beach than at all other sites, with Crissy Field receiving an estimated 3.2 million visits and Ocean Beach an estimated 2.8 million visits in 2009. Fort Funston and Baker Beach had similar visitation levels, at approximately 556,000 visits and 494,000 visits respectively, while Muir Beach had approximately 261,000 visits in 2009.

For Fort Funston and Muir Beach, Exhibit 6 presents monthly visitation estimates for dogs in addition to people.¹³ As with the estimates of human visitors, visitation estimates for dogs were developed by multiplying the monthly vehicle counts from 2009 by the ratio of dogs to vehicles observed during the four-day count period in August 2011. We estimate that there were approximately 16,000 dog visits at Muir Beach and approximately 626,000 dog visits at Fort Funston in 2009. Thus, there were approximately six dogs for every 100 visitors at Muir Beach, and there were approximately 115 dogs for every 100 visitors at Fort Funston.

The seasonality of visitation does not appear to be particularly strong at these sites: visitation is fairly consistent throughout the year. However, the late spring to early fall months (May through September) generally have the highest visitation levels, while the late fall and early winter months (October through December) generally have the lowest. Across all five sites with automated vehicle counters, July had the highest total visitation while December had the lowest.

¹³ While dog walkers were counted at all sites (see Exhibit 2), Fort Funston and Muir Beach were the only two sites where dogs were counted separately.

EXHIBIT 6: ESTIMATED VISITORS BY MONTH (2009)^a

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---------------------------|---------------------|---------|---------|---------|---------------------|---------------------|----------------------|----------------------|---------|----------------------|---------------------|---------------------|-----------|
| MUIR BEACH | | | | | | | | | | | | | |
| Persons | 18,713 | 13,486 | 14,327 | 37,341 | 20,021 ^e | 20,021 ^e | 23,458 | 27,274 | 26,158 | 21,834 ^e | 21,834 ^e | 16,851 | 261,317 |
| Dogs | 1,148 | 827 | 879 | 2,291 | 1,228 ^e | 1,228 ^e | 1,439 | 1,673 | 1,605 | 1,340 ^e | 1,340 ^e | 1,034 | 16,033 |
| RODEO BEACH ^b | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| CRISSY FIELD | 309,897 | 197,378 | 245,667 | 263,252 | 333,452 | 292,280 | 375,959 | 218,155 | 346,616 | 234,457 | 194,965 | 187,615 | 3,199,692 |
| BAKER BEACH | 44,648 | 29,222 | 39,409 | 43,513 | 52,689 | 47,438 | 61,478 | 34,966 | 53,910 | 33,844 | 26,662 | 26,312 | 494,089 |
| OCEAN BEACH ^c | | | | | | | | | | | | | |
| North | 151,611 | 103,357 | 106,782 | 113,532 | 133,143 | 125,174 | 156,232 | 96,051 | 147,915 | 101,012 | 97,862 | 91,984 ^e | 1,424,655 |
| South | 88,174 ^e | 106,461 | 103,806 | 103,890 | 139,597 | 120,463 | 112,863 ^e | 135,788 ^e | 124,914 | 107,572 ^e | 98,459 | 101,234 | 1,343,222 |
| Total | 239,785 | 209,819 | 210,588 | 217,422 | 272,740 | 245,637 | 269,094 | 231,839 | 272,829 | 208,585 | 196,321 | 193,218 | 2,767,877 |
| FORT FUNSTON ^d | | | | | | | | | | | | | |
| Persons | 34,420 ^e | 44,866 | 42,599 | 41,235 | 58,653 | 47,678 | 59,096 | 34,161 | 55,455 | 41,936 | 41,666 | 43,821 | 545,586 |
| Dogs | 39,485 ^e | 51,468 | 48,868 | 47,303 | 67,284 | 54,694 | 67,792 | 39,188 | 63,615 | 48,107 | 47,797 | 50,269 | 625,869 |

Notes:

^a Monthly visitation estimates are developed through a combination of on-site counts and automated vehicle counts (see text for details).

^b Rodeo Beach does not have an automated vehicle counter, so monthly visitation estimates could not be developed for this site.

^c Ocean Beach North includes the section of Ocean Beach north of Lincoln Way (visitors who remain on the promenade are not included in the estimates). Ocean Beach South includes the section of Ocean Beach between Lincoln Way and the Second Overlook parking area (visitors who remain in the parking areas or on the bluff are not included in the estimates).

^d Fort Funston estimates exclude visitors entering Fort Funston at the John Muir Drive entrance.

^e The vehicle count for this month was missing due to equipment failure or other factors. The visitation estimate was developed using an *estimated* vehicle count provided by the NPS Public Use Statistics Office.

4.0 DISCUSSION

This section provides a brief discussion of the results, including a comparison with a recent study conducted by researchers at San Francisco State University and an overview of significant caveats.

4.1 COMPARISON WITH SAN FRANCISCO STATE UNIVERSITY STUDY

In 2008 researchers at San Francisco State University (SFSU) conducted an on-site survey of visitors at Crissy Field and Ocean Beach (among other locations), providing an opportunity for comparison with the above results.¹⁴ The SFSU interviews were conducted during the late summer, from July 23 to September 14, 2008. Interviews were conducted at site entrances as visitors were leaving.

Exhibit 7 compares the results of the two studies for Ocean Beach and Crissy Field. At Ocean Beach, 40% of respondents to the SFSU survey indicated that the primary purpose of their visit was running/walking, 7% indicated that it was dog walking, 6% indicated that it was biking (on roads or trails), 3% indicated that it was surfing, 0.4% indicated that it was picnicking, and 44% indicated that it was another activity. In comparison, the IEc study found that 25% of Ocean Beach visitors were runners/walkers, 9% were dog walkers, 3% were bikers, 11% were surfers, 6% were picnickers, and 54% were pursuing another activity.¹⁵

At Crissy Field, 13% of respondents in the SFSU survey indicated that the primary purpose of their visit was dog walking. In comparison, the IEc study found that 24% of Crissy Field visitors were dog walkers. Comparisons between the two studies for other activities at Crissy Field would be misleading, as the IEc study only fully characterized visitor activities on the trails/promenade.

¹⁴ Tierney, Patrick. "Final Report: Summer-Fall 2008 Phase I Visitor Survey and Counts, at Crissy Field, Presidio and Ocean Beach Sites; Golden Gate National Recreation Area." November 2009.

¹⁵ IEc's Ocean Beach estimate only includes visitors who spent time on the beach, while the SFSU estimate includes beach visitors and visitors who may have remained on the boardwalk/promenade without accessing the beach. This may explain the higher percentages for runners/walkers in the SFSU study.

EXHIBIT 7: COMPARISON OF SFSU AND IEC ESTIMATES OF THE PERCENTAGE OF VISITORS PURSUING VARIOUS ACTIVITIES AT OCEAN BEACH AND CRISSY FIELD

| | SFSU STUDY (JULY-SEPT 2008) | IEC STUDY (NOVEMBER 2008) |
|---------------------|--------------------------------|------------------------------|
| OCEAN BEACH | | |
| Running/walking | 40% | 25% |
| Dog walking | 7% | 9% |
| Biking | 6% | 3% |
| Surfing | 3% | 11% |
| Picnicking | <1% | 6% |
| Other activity | 44% | 46% |
| TOTAL | 100% | 100% |
| | | |
| CRISSY FIELD | | |
| Dog walking | 13% | 24% |
| Other activity | 87% | 76% |
| TOTAL | 100% | 100% |

Differences between the two studies are not unexpected, as very different approaches were used to characterize visitors' activities. In the SFSU study, visitor interviews were conducted, and each visitor was asked to select his or her primary activity at the site from a list of possible activities. In contrast, in the IEC study, field staff observed visitors as they left the site and characterized each visitor's activity based on the equipment (or dogs) that they had with them. Each approach has advantages and disadvantages. While interviews likely provide the most accurate characterization of each visitor's activity, activities can only be characterized for the subset of individuals who agree to be interviewed. If response rates are low and if nonrespondents differ substantially from respondents, then nonresponse bias may impact the results.¹⁶ In contrast, when field staff characterize respondent activities, all visitors can be classified, but the activity classifications may not be accurate for all visitors. In particular, visitors who leave the site without identifiable equipment (e.g., a bike or surfboard) and without a dog are difficult to classify.

In addition, the two studies were conducted at different times of year, and visitor activities are likely to vary across seasons. The SFSU study was conducted in late summer, while the IEC study was conducted in November at Crissy Field and Ocean Beach. We would generally expect the proportion of dog walkers to be lower during the summer than in November: while dog walking is a fairly consistent, year-round activity, many tourists and families on summer vacation visit the sites only during the summer. We note, however, that the weather was unusually warm during the November 2008 data collection period (see discussion of caveats below); under normal weather conditions, it is possible that the proportion of dog walkers observed in November may have been even higher, which would have resulted in a larger difference between the two studies.

¹⁶ While the SFSU response rate was only 27%, the authors indicate that based on observable characteristics, nonrespondents appeared to be similar to respondents.

Finally, Ocean Beach and Crissy Field both have relatively diffuse patterns of visitor entry/exit with numerous formal and informal entrances. As a result, there were minor differences between the two studies in the specific locations covered by observers/interviewers.

4.2 CAVEATS

4.2.1 Limited Number of Days for On-Site Visitor Counts

It is important to note that all characterizations of visitor activities are based on only four days of on-site observations. On-site counts were conducted in November 2008 at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach, and in August 2011 at Muir Beach and Fort Funston. These four days may not accurately represent the mix of activities pursued by visitors throughout the year. Visitor activities can vary throughout the year due to seasonal variations in weather, the amount of available daylight for outdoor recreation, and the number of vacation days available (i.e., school vacations and holidays).

In addition to seasonal changes, the mix of visitor activities could have been impacted by unusual weather or special events occurring at specific sites during the four-day observation period. At Fort Funston, for example, an annual hang gliding race and barbeque occurred during the on-site count weekend. While we are unaware of any other special events that occurred during the on-site counts, there was unusually warm weather during the weekend counts in 2008 (Exhibit 8). This may have increased the number of visitors pursuing water-related activities such as surfing and swimming.

EXHIBIT 8: WEATHER CONDITIONS DURING ON-SITE VISITOR COUNTS^{a, b}

| | LOW TEMPERATURE (DEGREES F) | | HIGH TEMPERATURE (DEGREES F) | |
|---------------|-----------------------------|-----------------|------------------------------|-----------------|
| | OBSERVED | MONTHLY AVERAGE | OBSERVED | MONTHLY AVERAGE |
| November 2008 | | | | |
| 11/13/08 | 50 | 51 | 70 | 64 |
| 11/14/08 | 54 | 51 | 78 | 64 |
| 11/15/08 | 57 | 51 | 79 | 64 |
| 11/16/08 | 53 | 51 | 73 | 64 |
| August 2011 | | | | |
| 8/18/11 | 55 | 55 | 66 | 69 |
| 8/19/11 | 55 | 55 | 68 | 69 |
| 8/20/11 | 56 | 55 | 68 | 69 |
| 8/21/11 | 57 | 55 | 68 | 69 |

Notes:

^a Observations based on weather station located at San Francisco International Airport. There was no measurable precipitation during any of the sampling days.

^b Source: <http://www.wunderground.com>.

Estimates of the ratio of visitors to vehicles are also based entirely on the four-day on-site count period. If this ratio varies throughout the year, then the monthly visitation estimates may be biased. Families, for example, are likely to have more persons per vehicle than other types of

visitors. Families are also likely to visit recreation sites more often in the summer, when children may be on vacation. As a result, the use of visitor-per-vehicle estimates from a November count study may result in underestimates of visitation during the summer months.

4.2.2 Visitor Activities Characterized Without Conducting Interviews

All characterizations of activities are based on observations by field personnel rather than interviews with visitors. Observers placed each visitor in one and only one activity category based solely on the equipment they were carrying as they left the site and whether or not they were walking a dog. These characterizations may differ from the responses visitors would provide if they were asked to select a primary activity from a list of potential options.

For several activities, the observer characterizations are likely to be reasonably accurate. For example, we would expect that field personnel could successfully identify surfers, bikers, roller bladers/skaters, anglers, and hang gliders, as these visitors all have equipment that is easy to identify. In addition, school groups are easily identified due to the presence of a large group of children of approximately the same age.

Dog walkers are also fairly easy to identify because they have dogs with them. Nonetheless, there is likely to be at least some error in determining whether or not visitors are dog walkers. For example, when two individuals were observed walking a single dog, observers only classified one of the visitors as a dog walker, but it is possible that they both would describe themselves as dog walkers if they were interviewed. Conversely, some visitors observed with dogs and classified as dog walkers may not characterize their primary activity at the site as dog walking if they were interviewed; they may say they were walking, running, picnicking, or sight-seeing.

For activities without clearly identifiable equipment, observer characterizations are likely to be less accurate. For example, field personnel were asked to identify “Runners/Walkers,” “Picnickers,” and “Other Recreators.” While runners were easy to identify, it was sometimes difficult to distinguish among walkers, picnickers, and other recreators.

4.2.3 Site-Specific Caveats

Caveats associated with specific sites are described below:

- At Muir Beach, visitation estimates only include visitors who spent time on the beach. They do not include visitors who picnicked in the parking lot area or hikers who did not visit the beach but who used the Muir Beach parking lot to access the Coastal Trail.
- At Muir Beach, there was a children’s surfing camp at the site on 8/18/11 and 8/19/11.
- At Crissy Field, some visitors may have been counted twice if they left Crissy Field twice during a single visit. For example, some visitors may park in the Crissy Field parking lot, walk or run to Marina Green or another destination, then return to their vehicle at Crissy Field. These visitors would be counted once as they left Crissy Field on a path/promenade and a second time as they left Crissy Field in their vehicles.
- At Crissy Field, visitation estimates do not include visitors who only spent time on the large grassy area (i.e., the former airfield). However, it is important to note that visitors to the former airfield would have been counted if they spent any time at all on the promenade (e.g., en route to the former airfield) or if they parked in the East Beach or West Bluff lots.

- At Crissy Field, visitation estimates do not include visitors who remained only on the multi-use path along Mason Street without accessing the promenade or waterfront area.
- At Baker Beach, visitor activities were only characterized at the Sand Ladder Trail, a minor pedestrian entrance to the beach. This entrance is likely to have a higher proportion of runners/walkers than the main parking lot.
- At Baker Beach, visitors were not counted at 25th Avenue, a minor pedestrian entrance to the beach. Thus, the overall visitation estimates for Baker Beach may be biased downwards.
- The Ocean Beach visitation estimates only include visitors who spend time on the beach. They do not include visitors who remain on the boardwalk/promenade, visitors who remain in the parking lot, or visitors who remain on the bluff at Sloat Boulevard and Second Overlook.
- At Fort Funston, hang gliders were likely undercounted, as many hang gliders remained at the site past dark to socialize, and field personnel did not remain at the site after dark for safety reasons.
- At Fort Funston, visitation estimates exclude visitors entering the site at the John Muir Drive entrance. Field personnel did count visitors and dogs at this entrance for two hours (2:00 p.m. to 4:00 p.m.) on Sunday, 8/21/11. The visitor counts during this period were 19% of the visitor counts at the main lot during the same period of time, and the dog counts were 12% of the dog counts at the main parking lot.¹⁷

¹⁷ Due to the very brief timespan for counting at this location, results from the John Muir Drive entrance were not incorporated in the reported visitation estimates.

APPENDIX A

VISITOR ACTIVITIES BY TYPE OF DAY (WEEKEND VERSUS WEEKDAY)

EXHIBIT A-1: WEEKDAY VISITOR ACTIVITIES BY SITE^a

| | RUNNER OR WALKER | | | | BLADER OR SKATER | | | SCHOOL GROUP | HANG GLIDER | OTHER ^b | TOTAL |
|---|------------------------|-------|------|------|------------------------|-------|------|-----------------|----------------|--------------------|-------|
| MUIR BEACH | 12.9% | 4.9% | 1.2% | 2.8% | 0.0% | 0.2% | 0.5% | 0.0% | 0.0% | 77.5% | 100% |
| RODEO BEACH | 12.0% | 6.7% | 3.1% | 9.9% | 0.0% | 1.3% | 0.1% | 39.5% | 0.0% | 27.5% | 100% |
| CRISSY FIELD (TRAILS ONLY) ^c | 72.1% | 5.8% | 0.0% | 0.0% | 0.5% | 21.2% | 0.0% | 0.0% | 0.0% | 0.3% | 100% |
| BAKER BEACH (SAND LADDER ONLY) ^d | 88.4% | 7.8% | 0.7% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.7% | 100% |
| OCEAN BEACH ^e | | | | | | | | | | | |
| North | 33.7% | 10.4% | 4.3% | 7.4% | 0.4% | 1.9% | 0.2% | 0.0% | 0.0% | 41.6% | 100% |
| South | 29.3% | 10.6% | 1.0% | 6.3% | 0.3% | 4.9% | 0.6% | 0.0% | 0.0% | 47.1% | 100% |
| Total | 31.8% | 10.5% | 2.8% | 6.9% | 0.4% | 3.2% | 0.4% | 0.0% | 0.0% | 44.1% | 100% |
| FORT FUNSTON | 19.7% | 66.1% | 0.2% | 0.0% | 0.0% | 0.1% | 0.6% | 0.0% | 1.9% | 11.4% | 100% |

Notes:

^a Observations at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach are from November 2008. Observations at Muir Beach and Fort Funston are from August 2011.

^b As discussed in the text, visitors were placed in activity categories based on the equipment that they were carrying and whether or not they had a dog with them. As a result, many visitors could not be categorized and were simply classified as “Other.” The “Other” category is a catch-all category capturing visitors who were not carrying identifiable equipment, did not have a dog with them, and were clearly not running or walking for exercise. Visitors classified as “Other” frequently included typical beach visitors and sightseers.

^c The activity information in this exhibit applies only to visitors accessing the waterfront area of Crissy Field via trails or via the promenade. A more comprehensive estimate of the percentage of dog walkers – an estimate that includes visitors who leave the site via the two main parking areas – is provided in Section 3.3.

^d Although visitor counts were conducted at the Baker Beach parking lot entrance, no information about visitor activities is available from this location. The activity information in this exhibit applies only to visitors accessing Baker Beach via the Sand Ladder trail off of Lincoln Boulevard.

^e Ocean Beach North is defined as the area of Ocean Beach north of Lincoln Way, while Ocean Beach South is defined as the area of Ocean Beach south of Lincoln Way.

EXHIBIT A-2: WEEKEND VISITOR ACTIVITIES BY SITE^a

| | RUNNER OR WALKER | DOG WALKER | PICNICKER | SURFER | BLADER OR SKATER | BIKER | ANGLER | SCHOOL GROUP | HANG GLIDER | OTHER ^b | TOTAL |
|---|---------------------|---------------|-----------|--------|------------------------|-------|--------|-----------------|----------------|--------------------|-------|
| MUIR BEACH | 7.1% | 6.2% | 5.4% | 0.4% | 0.0% | 0.1% | 1.2% | 0.0% | 0.0% | 79.6% | 100% |
| RODEO BEACH | 22.8% | 9.4% | 9.7% | 3.8% | 0.0% | 2.4% | 0.1% | 2.1% | 0.0% | 49.7% | 100% |
| CRISSY FIELD (TRAILS ONLY) ^c | 71.0% | 5.9% | 0.1% | 0.0% | 0.4% | 21.4% | 0.2% | 0.0% | 0.0% | 1.0% | 100% |
| BAKER BEACH (SAND LADDER ONLY) ^d | 85.7% | 6.3% | 2.0% | 0.8% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 1.4% | 100% |
| OCEAN BEACH ^e | | | | | | | | | | | |
| North | 23.6% | 8.2% | 10.5% | 12.3% | 0.2% | 1.5% | 0.0% | 0.0% | 0.0% | 43.7% | 100% |
| South | 16.1% | 8.9% | 4.3% | 15.4% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 52.3% | 100% |
| Total | 20.0% | 8.5% | 7.5% | 13.8% | 0.1% | 2.2% | 0.0% | 0.0% | 0.0% | 47.9% | 100% |
| FORT FUNSTON | 30.2% | 57.4% | 0.6% | 0.0% | 0.0% | 0.3% | 0.4% | 0.0% | 0.7% | 10.3% | 100% |

Notes:

^a Observations at Rodeo Beach, Crissy Field, Baker Beach, and Ocean Beach are from November 2008. Observations at Muir Beach and Fort Funston are from August 2011.

^b As discussed in the text, visitors were placed in activity categories based on the equipment that they were carrying and whether or not they had a dog with them. As a result, many visitors could not be categorized and were simply classified as “Other.” The “Other” category is a catch-all category capturing visitors who were not carrying identifiable equipment, did not have a dog with them, and were clearly not running or walking for exercise. Visitors classified as “Other” frequently included typical beach visitors and sightseers.

^c The activity information in this exhibit applies only to visitors accessing the waterfront area of Crissy Field via trails or via the promenade. A more comprehensive estimate of the percentage of dog walkers – an estimate that includes visitors who leave the site via the two main parking areas – is provided in Section 3.3.

^d Although visitor counts were conducted at the Baker Beach parking lot entrance, no information about visitor activities is available from this location. The activity information in this exhibit applies only to visitors accessing Baker Beach via the Sand Ladder trail off of Lincoln Boulevard.

^e Ocean Beach North is defined as the area of Ocean Beach north of Lincoln Way, while Ocean Beach South is defined as the area of Ocean Beach south of Lincoln Way.

APPENDIX B

CRISSY FIELD INTERVIEWS BY TYPE OF DAY (WEEKEND VERSUS WEEKDAY)

EXHIBIT B-1: RESPONSES TO INTERVIEW QUESTIONS AT CRISSY FIELD (WEEKEND VERSUS WEEKDAY)

| | WEEKDAY | | | | WEEKEND | | | |
|---|---------------------------------------|---------------------------------------|--------------------------------------|----------------------|--|---------------------------------------|--------------------------------------|----------------------|
| | EAST BEACH PARKING LOT (N = 43) | WEST BLUFF PARKING LOT (N = 68) | EAST END OF PROMENADE (N = 97) | OVERALL (N = 208) | EAST BEACH PARKING LOT (N = 144) | WEST BLUFF PARKING LOT (N = 52) | EAST END OF PROMENADE (N = 80) | OVERALL (N = 276) |
| Percentage of respondents with dogs | 62.8% | 47.1% | 30.9% | 43.5% | 44.4% | 13.5% | 12.5% | 21.3% |
| Percentage of dog walkers whose dogs went in water | 44.4% | 18.8% | 50.0% | 42.1% | 67.2% | 42.9% | 60.0% | 59.1% |
| Percentage of respondents who went in the water | 14.0% | 0.0% | 3.2% | 5.7% | 27.0% | 6.3% | 12.5% | 15.4% |
| Percentage of respondents who visited the promenade | 81.0% | 70.6% | 95.8% | 86.4% | 72.7% | 61.5% | 97.5% | 84.9% |
| Percentage of respondents who went on the sand | 51.2% | 30.9% | 41.7% | 42.2% | 75.5% | 25.0% | 50.0% | 52.8% |
| Percentage of respondents who visited Torpedo Wharf | 16.3% | 29.4% | 18.9% | 20.3% | 9.9% | 50.0% | 16.5% | 20.2% |

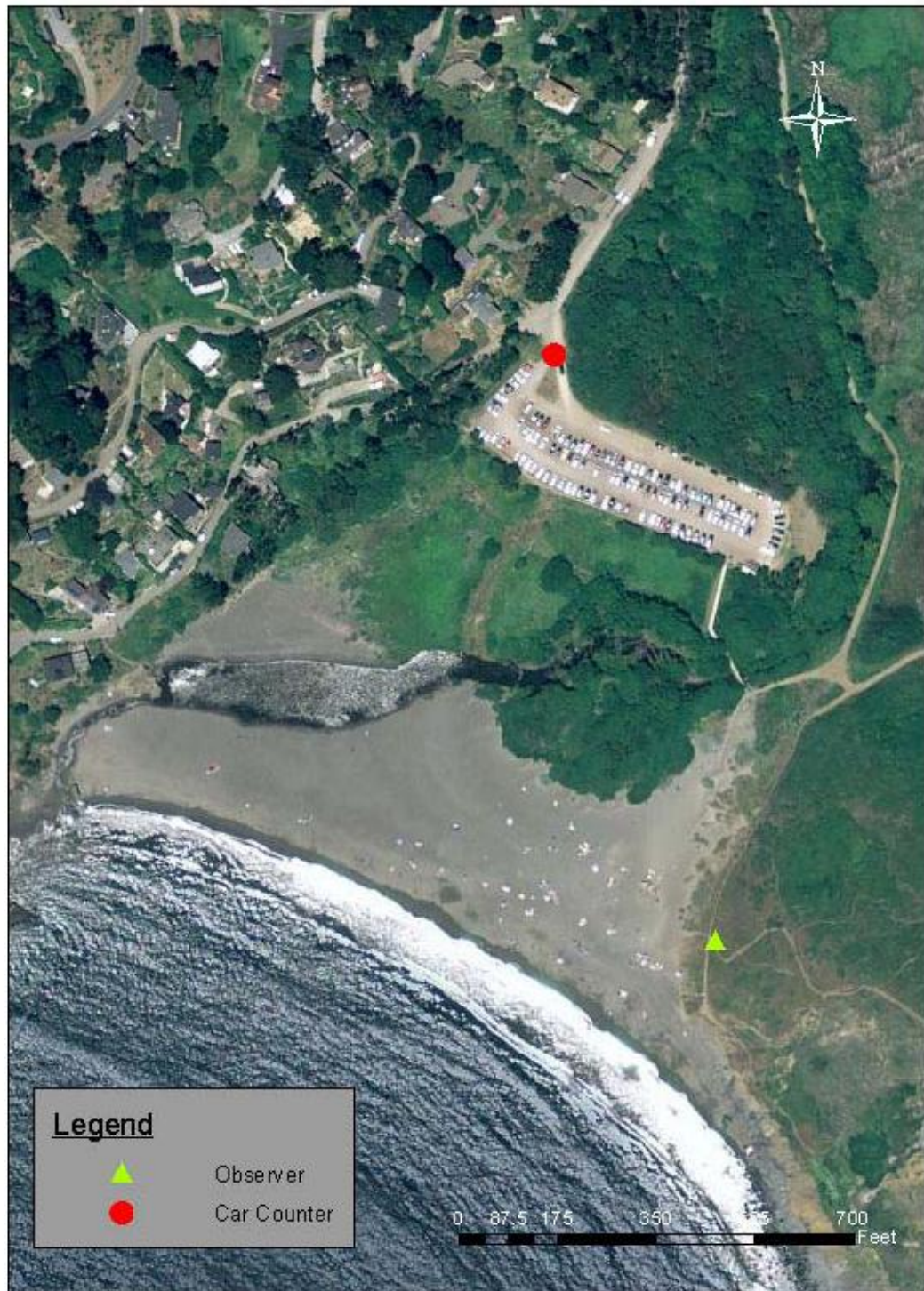
Notes:

^a Weekday interviews were conducted from November 13-14, 2008, and weekend observations are from November 15-16, 2008.

APPENDIX C

SITE MAPS

MAP 1 - MUIR BEACH



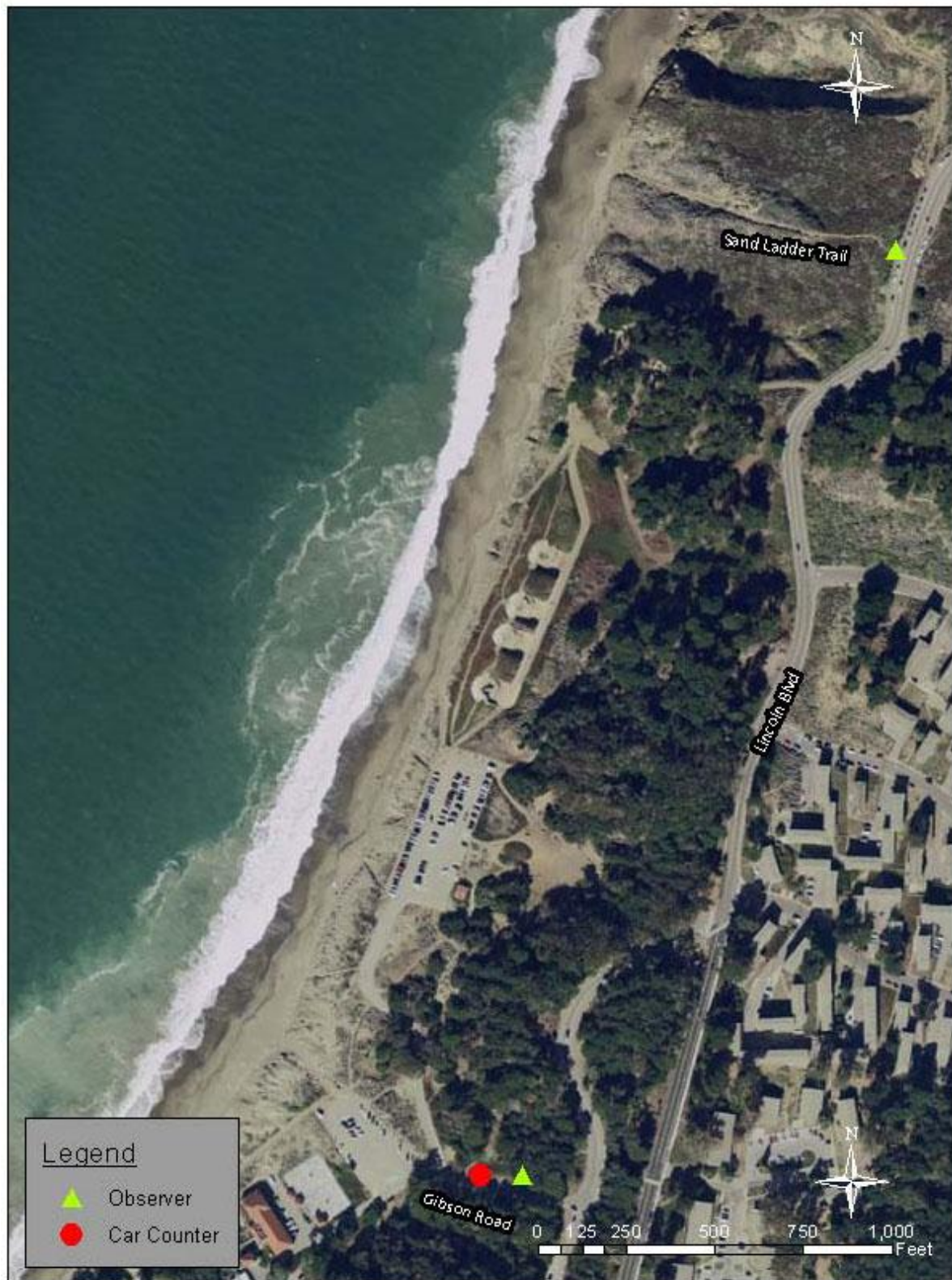
MAP 2 - RODEO BEACH



MAP 3 - CRISSY FIELD



MAP 4 - BAKER BEACH



MAP 5 - OCEAN BEACH NORTH



MAP 6 - OCEAN BEACH SOUTH



MAP 7 - FORT FUNSTON

